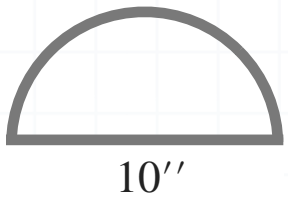
Topic: Circumference of a circle

Question: Find the circumference of the semi-circle.

Assume $\pi = 3.14$.



Answer choices:

A 15.7 inches

B 16.7 inches

C 14.7 inches

D 31.4 inches

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Solution: A

The formula for circumference is

$$C = \pi d$$

where C is the circumference and d is the diameter of the circle. Since the diameter of the semi-circle is 10, we get

$$C = (3.14)(10)$$

$$C = 31.4$$

This would be the circumference of the full circle with $d = 10$. Since we're looking for the circumference of just the semi-circle, which is half of the full circle, we need to divide the circumference of the full circle by 2.

$$C = 31.4 \div 2$$

$$C = 15.7$$

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Topic: Circumference of a circle

Question: What is the circumference of the circle?

The area of the circle is 12π.

Answer choices:

A $2\pi\sqrt{3}$

B 6π

C $4\pi\sqrt{3}$

D 8π

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Solution: C

Since we've been given the area of the circle, we'll plug it into the area formula.

$$A = \pi r^2$$

$$12\pi = \pi r^2$$

Divide both sides by π and rearrange.

$$r^2 = 12$$

$$r = \sqrt{12} = \sqrt{4}\sqrt{3} = 2\sqrt{3}$$

Using $r = 2\sqrt{3}$, calculate the circumference.

$$C = 2\pi r$$

$$C = (2\pi)\left(2\sqrt{3}\right) = 4\pi\sqrt{3}$$

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Topic: Circumference of a circle

Question: How far will the bike move?

A mountain bike wheel has a diameter of 26 inches, and the bike rolls forward so the wheel makes 100 revolutions. Use $\pi = 3.14$ and round to the nearest foot.

Answer choices:

A 680 ft

B $1{,}110$ ft

C $2{,}607$ ft

D $8{,}164$ ft

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Solution: A

The formula for the circumference of a circle is given by

$$C = 2\pi r$$

$$C = \pi d$$

Plugging in the approximation for $\pi = 3.14$ that we were told to use, and the value we were given for the diameter, we get

$$C = 3.14 \cdot 26 = 81.64$$

This tells us that one revolution of the wheel will move the bike 81.64 inches. Which means that 100 revolutions will move the bike

$$100 \cdot 81.64 = 8{,}164 \text{ inches}$$

We'll convert that to feet to get

$$8{,}164 \text{ in} \cdot \frac{1 \text{ ft}}{12 \text{ in}} = 680.3 \text{ ft} \approx 680 \text{ ft}$$

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